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This paper applies macro concepts of athletic endurance training to music performance by adapting a running training plan into a multi-week bassoon practice sequence leading up to a musical goal. The adapted practice program reflects a training plan for an endurance athlete. The purpose is to examine if adopting an athletic-based approach can be helpful to musicians. The sequence was followed and the results show that specified practice programs can be beneficial in music pedagogy.

CROSS-DISCIPLINARY ADAPTATION: A TRAINING PLAN FOR LUCIANO
BERIO'S *SEQUENZA XII*

by

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APPROVAL PAGE

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PREFACE

The key point leading to the hypothesis explored in this document is: A small adjustment in my approach to cycling training created exponential results and the positive effects of the experience continue to overwhelm me. I wanted to see if a similar approach could have similar benefits in musical performance.

There was a window for fulfilling my childhood dream of becoming a professional cyclist which was closing. I had spent my early life intermittently chasing the dream but had been fully committed to making it happen for the two previous years. I was improving but disappointed in my progress. I had one year left to make it happen or give up. After a casual conversation with a teammate, I made a small decision that changed everything. I decided to hire a coach. At the time, the decision seemed insignificant; it was only an adjustment in my approach to training. In fact, my training became easier and more enjoyable in many ways. However, the results of that adjustment in approach were monumental and I literally fulfilled my childhood dreams beyond their full extent. I became competitive on the national circuit, won my bucket-list race, and became a professional cyclist. The ripple effects from that experience are still being felt today. It didn't seem like much at the time, but in retrospect the moment I adopted a focused training program changed everything in my life for the better.

This project is a product of that experience. As a musician and a retired cyclist, I feel that the lessons of my journey from a struggling amateur to a competitive professional can be beneficial to musicians as it has been for me. I am sure there are

people struggling, trying to fulfill their dreams. My advice to those readers is this:
examine your approach; you may be putting in enough time already. Consider your plan.
Think about the consistency and sustainability of your efforts and most importantly, do
the work.

TABLE OF CONTENTS

	Page
LIST OF TABLES	vii
 CHAPTER	
I. INTRODUCTION	1
II. KEY CONCEPTS.....	5
Consistency	5
Sustainability.....	6
Execution	7
Benefits of COMET	8
III. A CASE STUDY IN APPLYING COMET TO LUCIANO BERIO'S <i>SEQUENZA XII</i>	9
<i>Sequenza XII</i> by Luciano Berio	10
Glissandi	12
Timbre Alterations	12
Tremoli.....	13
Articulations.....	13
Circular Breathing and Double Circular Breathing	14
Multi-phonics.....	14
Combinations of the Above	15
Additional Difficulties	15
Plan	16
Reflections	23
Circular Breathing and Double Circular Breathing	24
Glissandi	25
Tremoli.....	26
Timbral Alterations.....	26
Flutter-tongue.....	27
Quick Motion of the Tongue without Touching the Reed.....	27
Soft Staccato and Double Staccato: Hard and Aggressive	28
Endurance	28
General Reflections.....	29
IV. CONCLUSION.....	32

REFERENCES	35
APPENDIX A. TIMBRE ALTERATIONS.....	39
APPENDIX B. TREMOLO.....	40
APPENDIX C. GLISSANDI.....	41

LIST OF TABLES

	Page
Table 1. Running Plan	19
Table 2. Berio Plan	20

CHAPTER I

INTRODUCTION

This paper will propose a cross-disciplinary learning methodology for bassoon practice, one rooted in endurance athletic training concepts and lessons acquired through first-hand athletic experience. These experiences include my cycling career and recreational running. Chapter II of this paper will describe the fundamentals and origins of the concepts. Chapter III presents the case study of how I integrated this approach into my bassoon practice. The case study is intended to serve as a model for the method. In practice, the approach can be applied in many ways to help musicians improve any facet of their playing. For purposes of this paper, I will refer to my methodology as COMET. COMET is an acronym for a Consistent Operational (referring to the execution of work) Method based upon Endurance Training.

COMET is a learning method that specifically maps out a multi-week practice session plan to achieve a goal. The practice session outlines are derived from endurance athletic plans.¹ COMET follows an endurance athletic training model where the workouts are specified each day and the workload is increased gradually and consistently towards a goal. The key building blocks of COMET are consistency, sustainability, and the execution of planned actions to achieve the goal.

¹ Running, cycling, triathlon, cross-country skiing, etc.

The proposal of applying COMET to bassoon practice grows out of my experiences as an athlete. As a retired professional cyclist, I often reflect on the effectiveness of my structured training programs and believe that musicians could benefit from this method as well.

In some situations, musicians (especially college musicians who are going to school to become professional performers) are given a piece of music and told to go learn it, or told to go and fix an aspect of their playing. Usually it includes general concepts to work on, but I do not think that most musicians employ a specific multi-week plan with guidelines for every single practice session. If a plan is in place, my observation is that it is more often a week-by-week method, rather than a specific multi-week program leading up to a goal.

Musicians may have much to gain by adopting a more structured, large scale approach to practice aligned with the approach of competitive athletes. Athletes have daily workouts to execute within specific parameters and they trust to accomplish results if the work is done within those guidelines. Due to the subjective nature of music, musicians don't necessarily have easily defined parameters and the sessions can end up being more open-ended and less clearly-defined. Musicians may alter their practice session based upon many factors. Their current mindset, the multitude of musical elements they are looking to improve, upcoming performances, and their perception of how they are currently playing are only some of the issues that could impact how musicians execute their practice sessions. For the athlete, doing the workout can be like

checking something off a list. Because the body responds automatically to the stress the workout has caused, they can do their specified workout and move on with their day without giving it another thought. Musicians could benefit from that learning mentality. If students had specific guidelines to inform every practice session, it could help keep them engaged, make the sessions time-efficient, and more enjoyable. Combined, those benefits have potential to multiply, further enhancing the motivation to execute the work.

Another motivator for exploring this methodology is my experience of success using athletic analogies in my teaching. I believe that human performance is human performance in that people are seeking to improve their skillset in their respective fields. Parallels and adaptable lessons exist between the many human performance fields. I find myself comparing music to athletics and drawing parallels to illustrate my points. Whether it is comparing fast tonguing to sprints or comparing preparation for a recital to training for a marathon, the human performance aspect of music performance and athletics have much in common. Therefore, I assert that musicians can discover insights from the field of athletic training.

Growing up, I always wanted to be a professional cyclist and I had always shown potential in the sport. However, in the first two years that I was fully committed to chasing the dream of becoming a professional, my approach to training was haphazard and inconsistent. As a result, I had difficulty breaking through to the professional level. That changed once I hired a coach who mapped out my season and prescribed specific

daily workouts.² My training became more manageable and easier in many ways, but also significantly more consistent. I found myself doing the training I was told to do (not skipping workouts). My performance improved and I was competitive on the professional circuit.³ My experience of that coaching period, especially the simplicity of the training blocks, had a profound effect on my understanding of human learning and potential.⁴ These experiences are the foundation of this project. Reflecting on the reasons why the coaching years worked so effectively for me, I credit it to a few key concepts that have then informed this bassoon methodology. The key concepts from my athletic training that I draw upon are: Consistency, sustainability, and the execution of a specific plan.

² “Andy Applegate”, accessed December 5, 2016. CTS, <http://trainright.com/coaches/andy-applegate/>.

³ Kirsten Robbins, “A Symphony of Success | *cyclingnews.com*”, *cyclingnews.com*, last modified 2008, accessed February 7, 2017, <http://www.cyclingnews.com/features/a-symphony-of-success/>.

⁴ Laura Weislo, “Hekman Aims at NRC In His Final Year | *cyclingnews.com*”, *cyclingnews.com*, last modified 2010, accessed February 7, 2017, <http://www.cyclingnews.com/news/hekman-aims-at-nrc-in-his-final-year/>.

CHAPTER II

KEY CONCEPTS

Consistency

Endurance athlete (cycling or running) coaches would all agree that one of the most important rules in training is consistency. The concept of consistency in cycling training functions on multiple levels. It means having a similar week-to-week workout routine where the body is broken down or stressed from the workouts and then recovered. Consistency can also refer to the growth-rate of the weekly workload demands over a set time-period; meaning, if a goal is x weeks out, the amount of work each week would increase consistently. The consistency is found in the week-to-week work as well as the overall scope of the plan.

Amidst the intervals, data, devices, diets and all the other ways that athletes are trying to “gain an edge” in endurance training, it can be easy to forget the basics. The number one most important rule of training, which is often forgotten, is consistency. There is no training program or workout any coach can devise that can make up for a lack of consistency in training. The higher your goals are as an athlete, the more important consistency is.⁵

When I became proficient enough to join the professional ranks, consistency was the main fundamental difference in my training style. Consistency is also a fundamental

⁵ Jim Vance, “The #1 Rule of Endurance Training”, *Trainingpeaks*, last modified 2014, accessed December 5, 2016, <https://www.trainingpeaks.com/blog/the-1-rule-of-endurance-training/>.

concept in music pedagogy and every type of skill. To get better at something, one needs to engage with it in a consistent manner.

Consistency can only exist if the amount of work is sustainable. Therefore, adopting a sustainable workload is a key component of achieving consistency. If the workload is too much, it makes putting in consistent work difficult.

Sustainability

Another concept I experienced when I began training with a coach was the idea of training within your means. Reaching a goal does not happen in one workout, it is a process. Doing too much one day can have a negative impact on the following day. In my cycling training, the workouts prescribed for me were manageable. Of course, there were some workouts that would leave me exhausted, but for the most part, I could handle the workouts and I would finish the sessions feeling like I could do more if necessary. This concept of training within your means; keeping an eye on the big picture and the end goal, while systematically increasing the workload, is a key component in endurance athletic training and has been influential in the construction of COMET. A sustainable workload is necessary to facilitate consistent growth toward a goal.

For musicians, some may think that more is always better, or do as much as possible. Part of COMET is to allow the trainee to do their session, with the hopes they will leave the session thinking they could do more.

Execution

Doing the work that has been prescribed in a plan is crucial. This attribute may seem obvious—even redundant if there is a plan in place, but it is what sets apart amateurs from professionals. Professionals will do the work regardless of how they feel and amateurs generally will do it if they feel like it. It is one thing to plan to do something, like exercise, or practice, but it is an entirely different thing to execute the work. For my cycling years, when I had a coach holding me accountable to my workouts, I treated the workouts like a job, which facilitated consistency, made me faster, and in turn made the whole experience more gratifying. I have discovered that if a task (exercise, practice session) needs to be executed, it is easier to do if the task is specified than vague.

In Stephen Pressfield's book, *The War of Art*, he writes about adopting a “turning pro” attitude. He describes different fundamental approaches between professionals and amateurs in terms of doing work:

The amateur plays for fun. The professional plays for keeps. To the amateur, the game is his avocation. To the pro it's his vocation. The amateur plays part-time, the professional plays full-time. The amateur is a weekend warrior. The professional shows up seven days a week.⁶

Adopting this type of attitude and mental approach is a key component of COMET. The work needs to be treated like a job. It needs to be done. If a musician wants

⁶ Steven Pressfield, *The War of Art*, 1st ed. (New York City, NY: Rugged Land, 2002), 66.

to be a professional, they need to put the work in like a professional would. They need to execute the work. For musicians, this is where COMET can help. By having specific sessions that need to be completed, it can be easier to get in the practice room and execute the work. Contrast that with an open-ended practice session with no plan; having no plan could make it harder to enter the practice room in the first place or make it that practice is aimless and goals are not met.

Benefits of COMET

Musicians can benefit from having specific daily plans for multiple weeks leading up to a goal. One benefit is mental closure regarding practicing. With a plan, the practice session becomes a task that needs to be checked off. With no plan, there could be a sense of second guessing if the effort was spent appropriately.

The mental closure also creates mental clarity in the practice room. It allows the person to focus specifically on the task at hand, enhancing the mindfulness of the session, and possibly allowing for deeper absorption of the work being done.

COMET can change the entire mentality of practice sessions. It facilitates a workout mentality where the person rolls up their sleeves and gets to work. They do the work and are done, they don't have to think about anything other than the current task. After completing the sessions, the sense of accomplishment can feel like a reward. This can help keep a positive attitude and momentum going through a cycle.

It can also give the musician confidence. If they are doing the work and starting to see results, the mental confidence can increase and further enhance the process.

CHAPTER III

A CASE STUDY IN APPLYING COMET TO LUCIANO BERIO'S *SEQUENZA XII*⁷

COMET is a music methodology that creates daily plans for multiple weeks leading up to a musical goal. The goal can be anything; tone production, a technical fundamental such as tonguing, intonation, a specific piece, or it can be an entire recital program. What makes the methodology unique are the specified sessions each day. For this project, I chose to create a practice cycle for a single piece of music to investigate if a specific multi-week plan would be effective and to model a version of COMET.

When choosing a piece of music for this project, Luciano Berio's *Sequenza XII* was a prime candidate due to its unique technical and physical demands. The endurance requirement, the use of many extended techniques, and the general level of difficulty, created a challenge that I felt could benefit from COMET. The *Sequenza XII* is difficult for many reasons. The difficulty is found in the micro-control of finger and air support for the glissandi, it is in the overall physicality (double circular breathing for the entire piece), the variations of tongue techniques through the different articulation demands, the extreme dynamic range, fast register changes, and the need to do multiple techniques simultaneously. These demands influenced the direction and scope of my practice plan.

⁷ Luciano Berio, *Sequenza XII*, 1st ed. (Vienna: Universal Edition, 1998).

The *Sequenza XII* is a piece of music for unaccompanied bassoon that, when performed as per the instructions, requires the performer to produce sound continuously for 15-19 minutes without any momentary pauses or space for a conventional breath. The performer is expected to use double circular breathing (inhaling and exhaling stale air while maintaining sound on the instrument) throughout the entire work. In addition to using double circular breathing, the piece is filled with extended techniques ranging from different articulation styles (flutter-tonguing, double-tonguing, multiple staccato sounds), timbre alterations, glissandi, multiphonics, tremoli, and combinations of all the above. Since I had no capabilities of any of those techniques (except a rough ability to double-tongue), I thought that this would be the perfect piece to try my methodology. The following is a discussion of the *Sequenza XII* in terms of understanding the demands it puts on the player.

***Sequenza XII* by Luciano Berio**

The *Sequenza* series by Luciano Berio is a set of works for solo instruments, which has been noted to push the boundaries of the instruments' capabilities as well as the performers'.⁸ The *Sequenza XII*, written for bassoon in 1997, is no exception. It pushes the boundaries of the performer, so much that bassoonists may be intimidated by

⁸ Tom Service, "A Guide to Luciano Berio's Music", *The Guardian*, last modified 2012, accessed December 12, 2016, <https://www.theguardian.com/music/tomserviceblog/2012/dec/10/contemporary-music-guide-luciano-berio>.

it. The *Sequenza XII* is rooted in physical elements that create additional dimensions of expression:

Berio's engrossed exploration of the physical details of performance (fingering patterns in *Sequenza VI* for viola, sequences of resonance points in the mouth in *Sequenza III* for voice (1965–6), different uses of the tongue to modify airflow in *Sequenza XII* for bassoon) engendered solo works of singular density and extent.⁹

Janet Halfyard on the theatrical aspect of a performance of the *Sequenza XII*:

...only the one simple fact that the bassoonist must sustain the sound continuously for some 20 minutes, an act requiring such enormous physical stamina on a double reed instrument and such a specific technique—double circular breathing—that few players can even attempt the work. To appreciate the piece fully, one must first know that the technique is being used; but the result is comparable to watching a high-wire walker, marveling at the skill but with a frisson of danger arising from the knowledge that the slightest mistake could lead to ruin. Not unlike *Sequenza II* and *IV*, it is the sense that the physical capabilities of the player are being pushed to such an extreme that there is a danger of the performance ending in disaster which turns the musical event into a theatrical one.¹⁰

As stated in the instructions: “*sequenza XII* must be performed using ‘double’ circular breathing. The result is 19 minutes of continuous sound without rest or interruption.”¹¹ Double circular breathing is only one of the demands put on the

⁹B. Earle, “Remembering the Future. By Luciano Berio.”, *Music and Letters* 89, no. 2 (2008): 283-287.

¹⁰ Janet K. Halfyard, “Provoking Acts: The Theatre of Berio's Sequenzas”, in *Berio's Sequenzas: Essays on Performance, Composition and Analysis*, Janet K. Halfyard ed., 1st ed. (Farnham: Ashgate Publishing, LTD, 2007), 110-116.

¹¹ Berio, *Sequenza XII*.

performer. Many other techniques are used as well. The following is an explanation of those techniques. My experience in acquiring the skillset to employ them are further expanded upon in the “Reflections” section of this chapter. For the bassoonist looking for more information on how to execute these techniques, Pascal Gallois’ treatise, *The Techniques of Bassoon Playing*, covers all these and more.¹²

Glissandi

The piece can be interpreted as one big glissando from high A to low B-flat. The glissando is not continuous and has many interruptions. As a result, it is necessary to be able to do glissandi between specific notes. The glissandi are often used in combination with a timbral alteration, an articulation, and require breathing.

Timbre Alterations

Throughout the work, markings are notated to imply alterations between dark and bright timbres.¹³ In his treatise, Gallois refers to these as “Timbral Trills (Bisbigliandi).”¹⁴ Each instance either goes between bright and dark timbres, or from bright to normal to very bright. Often, these are used in combination with a glissando and or an articulation.

¹² Pascal Gallois, *The Techniques of Bassoon Playing* =, 1st ed. (Kassel: Bärenreiter, 2009),

¹³ Berio, *Sequenza XII*.

¹⁴ Gallois, *Techniques*, 65.

Tremoli

Gallois refers to the plural of tremolo as tremoli.¹⁵ The tremoli used in this piece are unique as most instances cross registers to create a special effect. “Berio was particularly interested in this phenomenon of wide-ambit tremolo, rich in overtones, since it allowed him to create a “synthesis” between the extremely characteristic and heterogeneous registers of the bassoon.”¹⁶ The intervals used in the tremoli in this piece range from a minor third to two and a half octaves. “In a certain sense, these are new sounds that resemble multiphonics without being multiphonics.”¹⁷ Gallois addresses potential fingerings and strategies for playing these in his treatise.¹⁸

Articulations

Four special types of articulations are used in this piece (not including normal tonguing). They are: a quick motion of the tongue near the tip of the reed without touching the reed; soft staccato; double staccato: hard and aggressive; and flutter-tongue. A specific articulation request may be notated over a single note, a group of notes, a tremolo, or over a glissando. Because of this, the articulations may be repeated over and over during the duration of the note(s) and glissandi.

¹⁵ Gallois, *Techniques*, 67.

¹⁶ Ibid., 67.

¹⁷ Ibid.

¹⁸ Ibid., 67-97.

Circular Breathing and Double Circular Breathing

Double circular breathing and circular breathing are similar concepts, but in practice they are different. Circular breathing is defined as:

A technique used principally by wind players to enable them to produce a continuous stream of notes without breaking to draw breath. The player inhales through the nose, filling the lungs with air; simultaneously, using the diaphragm, he replenishes the reservoir of air in the mouth cavity, while continuing to expel air from the mouth into the instrument.¹⁹

Gallois defines double circular breathing: “Double circular breathing consists of alternating inhaling and exhaling through the nose while playing...This technique is indispensable for a proper interpretation of Luciano Berio’s *Sequenza XII* for solo bassoon.”²⁰

Multi-phonics

Multi-phonics are used in this piece and Berio provides a specific fingering for each occurrence.²¹ All the suggested fingerings were effective.

¹⁹ Barry Kernfeld, “Circular Breathing”, *New Grove Dictionary of Jazz 2nd ed* (n.d.), <<http://www.oxfordmusiconline.com/subscriber/article/grove/music/J088100>>.

²⁰ Gallois, *Techniques*, 64.

²¹ The fingerings are for German System bassoons. The two types of modern bassoon systems are French and German. This piece was composed for the German System.

Combinations of the Above

Combinations of the techniques are abundant. For example, the piece may require you to flutter-tongue and do a tremolo simultaneously or do a glissando, tone color trill, and a repeated articulation. Combinations occur frequently throughout the work.

Additional Difficulties

The piece uses many rapid slurred and tongued register changes that are difficult to execute. Manipulation of the airflow and embouchure need to be coordinated to produce these changes.

Dynamic range in this piece spans from *pppp* to *fff*. The ability to have control across the entire range of the dynamics is another demand that requires much attention.

Musical direction in this piece comes from many different avenues. The repeated articulation effects help the musical interpretation move, as do the timbre alterations and the dynamics. Finding direction in the intensity of these aspects creates yet another challenge.

The *Sequenza* is a benchmark of bassoon literature and the thought of learning it can be overwhelming. However, by choosing to learn this piece, one can take their playing to the next level. To successfully perform it, the bassoonist will have had to develop independent control of fingers, air, embouchure, tongue, and be able to utilize these things in any combination necessary. Having that technical skillset can enhance other areas of bassoon performance.

Plan

To explore the benefits of the macro-concepts of endurance athletic training on this piece, I decided to adapt a running plan to become a music practice plan. Even though I have much more experience as a cyclist, I chose to adapt my bassoon plan from a running one rather than a cycling plan. In cycling, athletes can easily ride twenty hours a week. However, the time spent executing the workouts in a 5k running plan is far less (under ten hours per week). The plan I chose was conservative in terms of weekly workloads to stay within my threshold of sustainability. This also allowed for me to put a concentrated effort into the practice sessions without a break.

When formulating the plan, I took the demands of the *Sequenza* into consideration and applied large-scale endurance athletic training concepts. Throughout my athletic experiences, I noticed the following trend in training programs: in a training week, an intense training day would be followed by an easier day; a week would usually have two intense days as well as one long session; the remaining days are medium to short. A generalized training week could look like this:

Monday: Easy day

Tuesday: Some sort of intense workout (i.e. intervals, hills, sprints)

Wednesday: Easy day but longer than Monday

Thursday: Easy day

Friday: Another intense workout

Saturday: Easy

Sunday: Long session

This pattern repeats throughout the training program, gradually increasing the workload and intensity of the interval work and the length of the long session for a few weeks and then easing back for a week, then increasing again and finally tapering back towards the end. A twelve-week cycle could look like this:

Weeks 1-5: Gradually increase weekly workload

Week 6: Back off a little bit to recover

Week 7-10: Start at slightly higher workload than week 1 and gradually increase

Week 11-12: Gradual taper to finish

The training plan I adapted for the *Sequenza XII* is a twelve-week 5k running training plan designed to help a runner break the twenty-minute barrier for five kilometers.²² I chose this running plan on the basis that a good 5k time for my ability would be around twenty minutes and twenty minutes is also approximately the same time as a performance of the *Sequenza XII*. I also chose this specific plan because I have successfully used other programs by the same author. One plan claimed I could run a half marathon under an hour and a half and it worked.²³ I also followed the specific running program that this project is based upon, and ran a personal best 5k time of under twenty

²² Josh Clark, "Training Plans", *coolrunning.com*, accessed January 26, 2017, http://www.coolrunning.com/engine/2/2_4/index.shtml.

²³ "Mistletoe Half Overall Results", *ultimateracemanagement.com*, last modified 2017, <http://www.ultimateracemanagement.com/images/results/2013%20Results/2013MistleHalfOver.html>.

minutes.²⁴ The plan is simple, it gives recommended mileage each day along with specific workouts multiple times a week.

Countless training programs are available for free via the internet for anyone looking to achieve a certain athletic goal. Finding the perfect plan is not the most important part of the process. What is important is having one with a consistent approach and executing the work that is prescribed. The attributes I was seeking included varying workouts each week that encompass the following: one or two specific intense sessions a week, a longer session, and some general sessions. When I was cycling, many of my colleagues had training routines different from mine but still had similar macro attributes. I have concluded that following the plan consistently is more important than the choice of plan. This is especially true in the beginning of this process. The more training cycles an athlete goes through, the easier it becomes to see what is helpful and what is not. To understand what works and what does not, it is important to implement a plan and complete it. The original running plan is presented in Table 1.

²⁴ “2017 5K Results”, *shamrockrunnc.com*, last modified 2017, http://www.shamrockrunnc.com/2017_5k_results.htm#Overall_.

Table 1

Running Plan²⁵

Week	Mon.	Tue.	Wed.	Thu.	Fri.	Sat.	Sun.
1	Off	6 x 880s 5K pace	5M	6M	Fartlek (5M)	4M	7M
2	Off	Fartlek (5M)	5M	6M	6M	4M	7M
3	4M	6 x 880s 5K pace	4M	6M	6-8 Hills 5K pace	4M	8M
4	4M	8 x 440s 5K pace	4M	7M	5M	4M	8M
5	4M	6 x 880s 5K pace	4M	7M	6-7 long hills 5K pace	5M	9M
6	4M	10 x 440s 5K pace	4M	7M	6M	4M	10M
7	4M	8 x 880s 5K pace	4M	6M	6-7 long hills 5K pace	4M	5K Race (Or 6M)
8	4M	7M	4M	6M	6 x Fast 440s 5K minus 15 secs	5M	8M
9	4M	10 x 440s 5K pace	4M	7M	8-10 hills 5K pace	4M	7M
10	4M	8 x Fast 440s 5K minus 15 secs	4M	7M	7M	4M	5k Race (Or 6M)
11	Off	6M	8-10 hills 5K pace	6M	12 x 440s 5K pace	4M	5M
12	Off	8 x 440s	5M	Off	5M	4M	RACE DAY

²⁵ Josh Clark, "Training Plans," *coolrunning.com*, accessed January 26, 2017, http://www.coolrunning.com/engine/2/2_4/index.shtml.

The plan adapted for the Berio is presented in Table 2. Following the table are explanations of the acronyms.

Table 2

Berio Plan

Week	Mon.	Tue.	Wed.	Thu.	Fri.	Sat.	Sun.
1	Off	6 x 4 IET	50 GP	60 GP	50 IET	40 GP	3 x run through w/o DCB
2	Off	50 IET	50 GP	60 GP	60 GP	40 GP	3 x run through w/o DCB
3	40 GP	6 x 4 IET	40 GP	60 GP	6-8 x 2 CET w/ DCB to failure	40 GP	4 x run through w/o DCB
4	40 GP	8 x 2 min IET	40 GP	70 GP	50 GP	40 GP	4 x run through w/o DCB
5	40 GP	6 x 4 IET	40 GP	70 GP	6-7 x 3 CET w/ DCB to failure	50 GP	4 x run through w/ DCB (as possible)
6	40 GP	10 x 2 IET	40 GP	70 GP	60 GP	40 GP	4 x run through w/ DCB (as possible)
7	40 GP	8 x 4 IET	40 GP	60 GP	6-7 x 3 CET w/ DCB to failure	40 GP	Mock performance
8	40 GP	70 GP	40 GP	60 GP	6 x 3 CET w/ DCB to failure	50 GP	4 x run through w/o DCB
9	40 GP	10 x 2 CET	40 GP	70 GP	8-10 x 2 CET w/ DCB to failure	40 GP	3 x run through w/ DCB
10	40 GP	8 x 2 CET	40 GP	70 GP	70 GP	40 GP	Mock performance
11	Off	60 GP	8-10 x 2 CET w/ DCB to failure	60 GP	12 x 1 CET w/ DCB to failure	40 GP	1 x run through
12	Off	8 x 2 CET	50 GP	Off	50 GP	40 GP	Performance

Numbers refer to minutes unless in a N x N format. In that case the first number refers to number of sets and the second number refers to minutes.

GP: General Practice. Practice the piece per normal practice methodology. Try to spend as much of the time playing.

IET: Individual Extended Technique. Specifically practice techniques away from music, individually. This is the time to focus the techniques out of context of the piece to create proper fundamental execution.

CET: Combined Extended Technique. Practice combinations of techniques.

DCB: Double Circular Breathing

Additional notes:

*This plan is to be used only for engagement with the Berio. Warm-ups, other practicing, reed making, etc. need to be done separately.

*This plan is intentionally open-ended with the specific exercises in order to be able to treat specific problems.

*Circular breathing should be used as much as possible. It should be used during GP as well as IET and CET.

*The IET and CET workouts should be done away from the music. Use extracted techniques pages or improvise your own exercises within techniques.²⁶

²⁶ See Appendixes A, B, and C.

Considerations of the parallels in athletic performance and the *Sequenza* were necessary to adapt the run plan to a practice plan. I decided that the long runs were multiple run-throughs of the piece, the interval workouts became specific extended technique work, and the general running days became general practice sessions.

The running plan is based on mileage and I wanted my plan to be based on time. To adapt it, I put a consistent pace of ten minutes per mile to the mileage in the plan. The overall time scheduled for practice ranged from approximately three hours to seven hours. A key point is that all that time was spent playing. This time-frame was within my threshold of sustainability. The workload may seem like a small amount of time, but the idea is that the work happens every day and the consistency promotes continued growth.

I converted the long runs to multiple run-throughs. The idea of the long run in run training is to work on endurance and get used to being on your feet for that amount of time/distance. The long runs in run training are important workouts, and likewise with the Berio, it is also an important exercise.²⁷ It is necessary to get used to playing through the entire work to get a feel for the pacing of the piece. Also, the final pages can feel very different after playing through the whole thing as opposed to playing them as their own entity or when fresh.

The interval workouts that are generally on Tuesdays and Fridays in the running plan are unique workouts in that they are more intense than the others. I converted these

²⁷ Neil Cook, “3 Key Workouts Runners Should Do Every Week | Competitor.Com”, *Competitor.Com*, last modified 2014, accessed December 5, 2016. http://running.competitor.com/2014/07/training/run-three-times-a-week_8232.

days to specific sessions that focused on the extended techniques. These sessions were done away from the music in hopes of having a more solid foundation of techniques. To do these extended technique workouts, I created short-hand worksheets. For some techniques, I went through the piece and excerpted it by notating it on a separate piece of paper. Thus, I had one sheet of paper that had all the glissandi on it, one that had every instance of timbre alterations, and one that had the tremoli.²⁸ This way I could spend the time focusing on those techniques away from the score.

The general practice days were intended to work on the piece as I normally would practice. These sessions were intentionally open-ended to work on technique, musicianship, or any other issue I felt needed attention. I also tried to integrate double circular breathing into every practice session.

Reflections

I followed the set twelve-week plan I designed for the *Sequenza XII* and the effectiveness of COMET on this piece of music was significant. Prior to this project, I could not get through more than a few measures, and practicing the piece was one of the most mentally and physically excruciating things I have ever experienced on the bassoon. Once I had the plan, and I could set a timer and just suffer through it for the set amount of time, it became easier. The sessions pushed me past the threshold of physical discomfort, enhanced the positivity of the experience, and facilitated progress. Those benefits then made the sessions seem easier.

²⁸ See Appendixes A, B, and C.

An important part of COMET is executing the work that has been prescribed. The plan made it easy to engage with the piece for the set amount of time. Executing the sessions seemed extremely easy at first, but fluctuated in mental difficulty throughout. For the twelve-weeks of this project, I put the sessions at the highest priority level that I could. I set aside time every day to do the work, and although I wasn't perfect in getting them in every day, I did have approximately a 90% success rate. Of the eighty-four days in this training block, I missed nine sessions. Having a specified task each day made the sessions easier to complete. The specific purpose in each session created an opportunity to leave everything else behind and focus on the prescribed task. The sessions began to feel like a workout and gave a sense of accomplishment after.

There were some break-through moments when I could finally execute the techniques, and then there were plateaus where I didn't seem to improve for a while. Achieving the rough ability to execute techniques came relatively early in the cycle but the refinement of them is still an ongoing process. Each technique presented unique and specific challenges and often, the true difficulties continued to be revealed throughout the twelve weeks. The following reflects my learning experience for each technique.

Circular Breathing and Double Circular Breathing

To learn this breathing method, I utilized two resources. I watched Terry Ewell's instructional videos on YouTube.²⁹ Gallois also covers this technique and provides

²⁹ Ewell, Terry, "Practice Methods for Circular Breathing", *YouTube*. Last modified 2011, accessed January 26, 2017, https://www.youtube.com/watch?v=vg4APc-jqLc&index=3&list=PL_xCoWcKyxRSBSvGgz18gRPsFddvU81qb.

exercises for mastering the method in his treatise.³⁰ Grasping the initial concept did not take long, but creating fluid, unnoticeable breaths (especially in the extreme registers) is an ongoing process.

In the initial stages, I focused primarily on circular breathing (only inhaling). I used a reed with a small aperture to create more resistance to push against while expunging the air from my cheeks during the inhalations. As time went on, I gradually opened the aperture until I could execute the breaths with my normal set-up.

Double circular breathing was difficult and uncomfortable. The exhalation through the nose required a shift in my nasal physiology that felt unnatural. It was so difficult for me, I even (unsuccessfully) explored the possibility of releasing the stale air through an embouchure leak. Focusing on double circular breathing during the short, intentional sessions of COMET were instrumental in my progress in this technique and allowed me to surpass the threshold of the discomfort.

Glissandi

The difficulty of the glissandi in this piece varies. For some, it is as simple as relaxing or tensing the embouchure and support while slowly adding or removing a finger. However, others require an entire sequence of finger additions or subtractions, along with embouchure and support adjustments. For this technique, the extracted technique page was helpful, as I could write the finger sequence over each glissando and

³⁰ Gallois, *Techniques*, 64.

have an index of sequences.³¹ The basic concept of this technique was accessible but creating even and seamless glissandi throughout the piece, especially in the extreme registers and across registers is a skill that requires consistent attention and maintenance.

Tremoli

The complication for me was the coordination of the air and the fingers to produce the desired effect. Some tremoli used traditional fingerings while others used altered ones. Finding the proper air and embouchure support to use for each occurrence was a process and was different with each reed. The extracted technique page was once again useful.³² My ability to execute the tremoli increased steadily throughout the twelve weeks.

Timbral Alterations

This technique is straightforward. It involves alternating low register keys, resonance keys, or muted and un-muted fingerings. An issue I encountered was that every reed seemed to respond differently to fingerings I was using. Some fingerings would change the pitch on certain reeds but not on others. I again used the extracted technique pages to help me create an index of options that allowed me to adjust as needed.³³ Another consideration that required focus was the pacing of the alterations. The timbral

³¹ Appendix C.

³² Appendix B.

³³ Appendix A.

shifts add to the musical interpretation and the speed at which they are done can create direction to the music.

Flutter-tongue

According to Gallois, bassoonists use two types of flutter-tongue, “with the tip of the tongue or with the glottis.”³⁴ Initially, I adopted the tip of the tongue method. As my learning progressed, I realized that the tip of the tongue was difficult to initiate in certain circumstances. Because of this, it was necessary to also learn and employ the glottal method. This manner of flutter-tonguing seems to be more versatile and better suited for most circumstances in this piece. Learning the glottal method was time-intensive. I was partially successful, but more work would be needed for me to be able to maintain the flutter throughout decrescendos, enacting the technique during extremely soft passages, and utilizing it in extreme registers.

Quick Motion of the Tongue without Touching the Reed

From the onset, I simply could not execute this articulation without an extreme adjustment to my embouchure. I had to pull the reed mostly out of my mouth to enable the technique, creating a disruption in the music. When the technique was called for in the piece, the physical shift in my embouchure created an interruption in the musical line. Focused work on the technique allowed my tongue to gain enough flexibility to do so and once I became used to the technique, it felt natural and became easy to use.

³⁴ Gallois, *Techniques*, 67.

Soft Staccato and Double Staccato: Hard and Aggressive

The demands of these staccato articulations were within my ability from the beginning. These are valuable tools for musicality by adding either direction or an effect. Like many of the techniques in this piece, the further I moved through the learning process, complete refinement of the technique seemed to become more elusive. The more familiar I became with the piece, the more I wanted to execute the techniques in a precise and specific manner.

Endurance

The endurance factor improved significantly throughout the twelve weeks and by the end of week eight, I did make it through the piece without a conventional breath. However, to do so, significant sacrifices of tone quality, response, and dynamic range were made. Therefore, a question arose: At what point do I sacrifice the music and tone color for simply getting through the piece? Interpretation of a successful performance exists on a continuum. To execute some parts may mean to sacrifice other parts.

The endurance threshold required to play this piece with authority is high. Having the ability to easily get through the entire piece without a single break for a breath was something I had hoped to achieve through COMET. My threshold improved throughout the training program, but still fell short. Reflecting on the amount of progress I made during one twelve-week cycle, I estimate that two more twelve-week cycles would be needed to build the amount of stamina the piece requires.

The techniques are a big part of the learning process of this piece. The twice-weekly, technique-focused sessions in COMET were useful for integrating them into my arsenal of skills and the run-through endurance sessions were crucial in building stamina.

General Reflections

The plan did bring me close to my goal of being able to perform the piece, but it did not enable complete proficiency. In hindsight, my goal was too lofty and my expectations of how much progress could be made in twelve weeks was too high. However, the improvement I made in those twelve weeks far surpassed the previous three years of unorganized, intermittent practice. Music performance is subjective and the better I became at the piece, the more I noticed nuances and small details I wanted to improve. Just like an athlete would work through multiple phases of training in a season, a twelve-week cycle is only the first step in a long process. Going forward, I would create another plan to focus on certain nuances and issues that remain a struggle for me. Specifically, the struggles are the endurance aspect as well as having enough command of the techniques to facilitate more musical direction.

Breakthroughs occurred. In my opinion and from my perspective, my overall bassoon playing improved due to the demands of the *Sequenza XII*. The nature of the techniques leaves little room for compromised fundamentals. One fundamental that practicing the work caused me to explore more deeply is that of support. The piece is a constant reminder that the support of a bassoon sound does indeed need to come from the lower part of the abdominal cavity. The embouchure cannot be a primary source of

support, or at least not a significant part of it. With the techniques like the flutter tonguing and circular breathing, the embouchure must remain available to move and adapt to facilitate those techniques. Trying to support using the embouchure will lead to extreme fatigue.

I also considered developing a custom reed for the piece rather than using my normal reed design. This idea was abandoned when I realized the reed is not a crutch. As much as I wanted to blame the reeds or thought a specific reed design would make it easier to execute this piece, the reality remains that the reed will not make up for lack of ability in a piece like this. This is yet another reminder of the importance of proper support.

There were other interesting discoveries. Most of the techniques came around into the “I can do it” range rather quickly, but then improvement toward complete proficiency became incremental. I noticed that I felt fresher and the techniques seemed easier in the session following an easier day. The circular breathing allowed me to loop things over and over which became a helpful practice technique. I experienced moments of sheer bliss while playing my bassoon. At moments, I felt I was controlling this sphere of musical energy and could manipulate it how I saw fit.

Based upon my experience of completing this practice session plan, implications for the use of COMET are apparent. I believe COMET has a place in music pedagogy, especially at the college level where students are going to school to become professional performers. With the flexibility in the range of goals, teachers could create a cycle as a

part of a student's weekly routine. The cycle could be a portion of their daily practice, but it could focus specifically on a skill that needs improvement. Teachers could use plans to attack specific weaknesses or strengthen fundamentals in players, and they could have a series of practice programs for students to complete. Teachers could have one cycle each semester that focuses on a different fundamental aspect of playing and stack the fundamental blocks in a strategic manner as needed. Training plans are useful for human performance in athletics and I feel they could be useful to musicians as well.

CHAPTER IV

CONCLUSION

This project has been a personal cross-disciplinary exploration where lessons from athletic experiences and training models are applied towards a musical goal of learning and performing Luciano Berio's *Sequenza XII*.

Going through this process has highlighted some questions for future research. Is there a way to set parameters for teachers to design training programs for their students? With the subjectivity of music, will the parameters always be based on the individual musician, or is there a way to establish a universal set? Is there a convenient way for the students to log their work and an easier way for a teacher to check to see if the student actually did the work? Recording practice sessions and having a teacher analyze them creates a tremendous amount of work for a teacher. If there was an uncomplicated way to log and review practice sessions, accountability could be a powerful motivator as well as a tool for assessment in private lessons. Another question is how could COMET be best utilized? Would it be for specific pieces of music or for fundamentals? I feel that many successful musicians are by default doing what COMET implies, but is there a way to recognize when it could be most effectively employed?

Teachers can utilize COMET in many different ways. The model for the *Sequenza XII* is only one example. COMET can be applied to every aspect of music performance,

even musicality. Musicality could be targeted by creating a plan based around playing well-known melodies away from the music while simultaneously focusing on dynamic range, tone production, varying articulations, and vibrato. Those elements could begin at an accessible level and be gradually increased and manipulated throughout the plan.

If teachers started creating and utilizing multi-week plans, those plans could be shared and instigate discussions regarding what type of routines were beneficial and which ones were ineffective. If enough teachers began using this method, a compilation of practice session plans could be created. Having a bank of multi-week routines could be a valuable resource for the field of music performance.

Different disciplines can learn from each other and cross-disciplinary discussions can be useful in the quest of mastering a craft. Take this social media post from a running coach to Olympians, Steve Magness:

A tip for those aspiring to master their craft: As you grow in your field, the lessons should come from outside of it. Yes, you need to understand the specifics of your field: the history, the foundation (Nail the basics!), the science. But as you develop, real insights come from connecting fields that seem to have nothing whatsoever to do with your own. It's in these far flung areas where you'll find true breakthroughs. In my own field of coaching, my coaching style is littered with lessons from books on grammar and writing, evolutionary biology, cognitive psychology, Ecology, Industrial design, medicine, Philosophy of the ancient Romans, war-time memoirs, and stories from drug addicts overcoming their struggles. It's in these seemingly disparate fields where lessons lie waiting for you to uncover them and tie them back to your own. It's in these connections where true innovation occurs. The basics are needed. They are a necessity. Without them, you have no foundation off of which to explore. There is nothing to connect back to. Understand, ingrain, and master the basics. But then, venture out.³⁵

³⁵ "Instagram Post by Steve Magness • Sep 11, 2016 at 8:15Pm UTC", *Instagram*, last modified 2016, accessed February 14, 2017, <https://www.instagram.com/p/BKOouQtgKjI/>.

Understanding the way other areas of human performance operate and the way other people acquire skills in their fields can be insightful and helpful to our own disciplines. I hope this project inspires musicians to examine other fields in their quest for mastery.

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APPENDIX A
TIMBRE ALTERATIONS

3=dark to bright to very bright

All others alternate between dark and bright

Extracted from Luciano Berio's *Sequenza XII*

For practice purposes only

The musical notation is presented in four staves, all in bass clef. The first staff contains a sequence of notes: a half note with a sharp sign, a half note with a flat sign, a half note, a half note, a half note with a flat sign, a triplet of eighth notes with a sharp sign, a triplet of eighth notes, a half note, and a half note with a flat sign. The second staff begins with a triplet of eighth notes, followed by a half note with a sharp sign, a half note, a half note, a half note, a half note, a half note, a half note, and a half note with a flat sign. The third staff starts with a half note with a flat sign, followed by a half note with a sharp sign, a half note, a half note with a flat sign, a half note, a half note with a sharp sign, a half note, and a half note. The fourth staff begins with a half note with a flat sign, followed by a half note with a flat sign, a half note with a sharp sign, a half note with a sharp sign, a half note with a sharp sign, a half note, and a half note with a flat sign. The notation includes various dynamic markings and articulation symbols, such as accents and slurs, to indicate timbre alterations.

APPENDIX B

TREMOLO

Each measure is a tremolo

FL=flutter tongue

Extracted from Luciano Berio's *Sequenza XII*

For practice purposes only

The musical score consists of six staves of music, each containing a tremolo exercise. The exercises are marked with 'FL' (flutter tongue) and various musical notations including slurs, accidentals, and dynamic markings.

Staff 1: Measures 1-8. Measures 1-4 are marked 'FL'. Measure 5 has a slur over a whole note. Measure 6 has a slur over a whole note. Measure 7 has a slur over a whole note. Measure 8 has a slur over a whole note.

Staff 2: Measures 9-16. Measures 9-12 are marked 'FL'. Measure 13 has a slur over a whole note. Measure 14 has a slur over a whole note. Measure 15 has a slur over a whole note. Measure 16 has a slur over a whole note.

Staff 3: Measures 17-24. Measures 17-20 are marked 'FL'. Measure 21 has a slur over a whole note. Measure 22 has a slur over a whole note. Measure 23 has a slur over a whole note. Measure 24 has a slur over a whole note.

Staff 4: Measures 25-32. Measures 25-28 are marked 'FL'. Measure 29 has a slur over a whole note. Measure 30 has a slur over a whole note. Measure 31 has a slur over a whole note. Measure 32 has a slur over a whole note.

Staff 5: Measures 33-40. Measures 33-36 are marked 'FL'. Measure 37 has a slur over a whole note. Measure 38 has a slur over a whole note. Measure 39 has a slur over a whole note. Measure 40 has a slur over a whole note.

Staff 6: Measures 41-48. Measures 41-44 are marked 'FL'. Measure 45 has a slur over a whole note. Measure 46 has a slur over a whole note. Measure 47 has a slur over a whole note. Measure 48 has a slur over a whole note.

APPENDIX C

GLISSANDI

Rhythms are not represented

Extracted from Luciano Berio's *Sequenza XII*

For practice purposes only

FL=flutter-tongue

TT=timbral alteration

TT3=three color timbral alteration

TNT=tonguing near the tip of the reed

DL=soft staccato

TK=double staccato

TT3; TNT FL DL TT; TNT FL FL TT TNT TNT DL TK TT; DL TT; TNT TT; DL FL TNT TT TNT TNT DL TK FL TT; TNT TK FL DL TK TNT FL TNT